producing insects. It contains, in particular, an account of a little-known pamphlet by Dr. Friedel (Leipzig, 1701), a man who, as the authors point out, was possessed of the true scientific spirit, but who appears to have corrected the blunders of Leewenhoek only to make lesser blunders of his own.

The *Rendiconto* of the Bologna Academy for 1905–6 has been recently issued. It contains papers by Prof. Guido Tizzoni and Dr. A. Bongiovanni on the curative action of radium on the virus of rabies, together with a short communication on the same subject by Prof. Ivo Novi, who seems to have arrived at somewhat different conclusions regarding the efficacy of the cure. In addition, Prof. Cesare Arzella discusses in two short notes the conditions of integrability of a series of integrable functions and of partial differential equations respectively.

From Captain Lyons's report of the Survey Department of Egypt in 1906, it appears that the two principal features of the work during the year were the completion of the cadastral survey (large-scale plans of the cultivable land of Egypt, on which the individual holdings are indicated), and the publication of about one-quarter of the general map of the Nile valley and the delta on the scale of 1 : 50,000. The work of the meteorological section has greatly increased; among many improvements we may mention that since January, 1906, monthly summaries of the weather have been prepared and published, and that subsequently the area of the Daily Weather Report has been enlarged to include pressure and wind data over the eastern Mediterranean and Nile basin, thus filling up an important gap in the regions for which weather conditions are mapped daily.

The September part of the Journal of the Institution of Electrical Engineers contains a paper by Mr. E. W. Moss in which, under the title "Electric Valves," short accounts are given of the theory and modes of action of many of the devices used at present for converting alternating into direct currents. Of these, the Norden electrolytic valve and its modifications appear to have proved themselves most capable of dealing with heavy currents, while the glow-lamp valve of Dr. Lee de Forest and Prof. Fleming seems one of the most convenient for the small currents used in wireless telegraphy.

Our knowledge of the electrical state of the atmosphere should in the near future receive considerable additions from the observations which, according to the June number of *Terrestrial Magnetism and Atmospheric Electricity*, are about to be taken on board the United States magnetic survey yacht *Galilee* during her cruise in the Pacific and by the staff-surgeons on board two of the vessels of the German Royal Navy. The potential gradient, the conductivity of the air, and the radio-activity of air and sea-water are all to be measured regularly during calm weather.

Crystallised alumina occurs in nature in varying shades of colour, ranging from the colourless sapphire to brown and opaque corundum. The ruby, sapphire, and oriental amethyst are varieties distinguished by their transparency and colour. These colours have been attributed to the presence of traces of salts of iron, manganese, chromium, titanium, and other metals, but the experiments described by M. F. Bordas in the current number of the *Comptes rendus* (No. 18, October 28) would appear to prove that this explanation is insufficient, since by submitting a coloured stone to the action of a highly active radium bromide the colour is modified, passing from red through violet, blue, and green to yellow. Radium bromide of an activity of 1,800,000 was used in these experiments, the time of exposure not being stated. The action could be modified by graduating the activity of the radium salt or by increasing the distance of the stone from the radio-active material. The stones thus treated are not radio-active; they do not light up in the dark under the influence of pure radium bromide, and the coloration is permanent as regards heating.

Dr. W. Doberck has retired from the position of director of the Hong Kong Observatory, and has been succeeded by Mr. F. G. Figg. He desires it to be known that his permanent address is now "Knowloon," Elgin Road, Sutton, Surrey.

Under the title of "A Chronicle of Science," the *Graphic* publishes fortnightly articles which deal attractively and accurately with topics of scientific interest. The issue of October 19 contained an illustrated description of the Percy Sladen Trust Expedition to the Indian Ocean, and the current number (November 2) includes portraits of Sir John Evans and the Rev. W. H. Egerton—the "father" of the Geological Society. Sir John Evans will celebrate his eighty-fourth birthday on November 17, and Mr. Egerton his ninety-sixth on November 13. Mr. Egerton was elected a Fellow of the Geological Society in 1832, and has therefore been on its roll for seventy-five years.

Among new books shortly to be issued are to be noted:—"The Functional Inertia of Living Matter," by Dr. D. Fraser Harris; "A Manual of Prescribing," by Dr. C. R. Marshall; and a revision of "Waring's Bazaar Medicines of India," by Lieut.-Colonel C. P. Lukis, I.M.S. Messrs. J. and A. Churchill will publish these three books.

A new edition of Mr. Wm. Woods Smyth's "The Bible in the Full Light of Modern Science" has been published by Messrs. Simpkin, Marshall and Co. Much new matter has been added. The price of the book is 1*s*. 6*d*. net.

Mr. Carl Zeiss, of Jena (London address, 29 Margaret Street, W.), has published in brochure form full particulars of the field glasses he is prepared to supply. It is convenient to have in this concise form details as to price, linear magnification, and so on of these widely used glasses.

Erratum.—In Prof. Rutherford's letter in Nature of last week (October 31, p. 661, col. 2, line 23), for "picradium" read "preradium."

OUR ASTRONOMICAL COLUMN.

Comet Mellish (1907*e*).—Observations of comet 1907*e* made at the Lyons Observatory on October 17 showed that the object had the appearance of a diffused nebulosity of about 35″ diameter, was of about the tenth magnitude, and had a slight central condensation. Observing at the Marseilles Observatory on October 17 and 18, M. Borrelly found the comet to be fairly bright and extended, with a granular appearance (*Comptes rendus*, No. 17, October 21).

Other observations are recorded in No. 4210 of the *Astronomische Nachrichten* (p. 163, October 28), in which Herrn G. van Biesbroeck reports that on October 19, using the 15-inch refractor of the Uccle Observatory with a magnification of 240, he saw the comet as a circular, nebulous object of 1′ diameter and of the tenth magnitude. A central condensation, but no stellar nucleus, was seen.

Prof. Becker, director of the Strassburg Observatory,

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directs our attention to the fact that the Strassburg observation of this comet, mentioned in these columns last week, was made by Dr. Wirtz.

The following is an abstract from the ephemeris published in No. 4209 of the *Astronomische Nachrichten* (p. 147, October 25) by Dr. M. Ebell:—

Ephemeris 12h. (M.T. Berlin).

1907	α (true) h. m.	δ (true) ° '	Brightness
Nov. 4	6 24·3	+ 8 26·4	2·7
,, 8	5 29·7	+15 6·5	3·0
,, 12	4 24·4	+21 28·1	2·8
,, 16	3 18·3	+25 51·0	2·3

The brightness on October 15, magnitude 9·5, is taken as unity.

From the above it will be seen that the comet is apparently travelling rapidly through Taurus, and will pass some 4° to the north of Aldebaran on November 11. On November 15 it will be less than 1° north of the Pleiades.

THE TRANSIT OF MERCURY.—Astronomers who intend to observe the approaching transit of Mercury, which will take place on November 14 in accordance with the times communicated by Dr. Downing to last week's NATURE, will find many interesting notes and suggestions in M. Bigourdan's articles in the *Comptes rendus* (Nos. 16 and 17) for October 14 and 21 respectively. In the former article M. Bigourdan discusses the conditions which are necessary for a transit, the results of earlier observations, and a few of the phenomena which it is advisable to observe. For example, he suggests that an attempt to repeat Langley's observation of Mercury before the first contact in 1878 might be made. In the same year Janssen, using a spectroscope, was able to see the planet projected on a bright prominence before contact with the sun's limb, but this is an unlikely observation at the coming transit, because the contacts take place near the north pole of the sun, where prominences are fewer.

In the second article M. Bigourdan deals with other points of interest, such as the exact measurement of the distances between the edge of the planet and the sun's limbs in order to determine more exactly the times of the contacts, the form of Mercury's disc as seen on the sun, and the possible observation of satellites, which, if they existed, might be seen projected on the bright solar disc; the determination of the planet's diameter and the effects of different apertures in such observations are also discussed. As Mercury will be seen on the sun's disc at midday in Europe, its exact position on the disc may be determined with meridian instruments. M. Bigourdan then discusses the previous observations of both bright and dark rings surrounding the disc of Mercury, and suggests that a spectroscopic examination might reveal special absorption lines, the existence of which would prove the reality of the annuli, and hence the existence of an atmosphere belonging to the planet. Observations of bright points and spots on the planet's disc have been frequently reported during previous transits, but the real existence of such phenomena still requires further confirmation. M. Bigourdan's second paper concludes with a discussion of the methods of observation and the class of instruments it is advisable to employ.

CHANGES ON SATURN'S RINGS.—A telegram, dated October 28, transmitted by Prof. Pickering to the Kiel Centralstelle, announces that Prof. Campbell observed prominent bright knots, visible during the past week, in Saturn's rings. The knots were symmetrically placed, two being to the east and two to the west (Kiel Circular, No. 101, October 28).

A BRIGHT METEOR.—Mr. Arthur Mee reports that a magnificent meteor was seen by observers at Cardiff and Newport on the evening of October 31. It appeared at exactly 10 o'clock, and fell leisurely from γ Cygni to a point just west of Vega. The head "opened out like a rocket," leaving a train that remained visible for several seconds. Those who saw it are not quite agreed as to the colour of the head, but all testify to its great brilliancy, though the night was by no means a dark one.

THE NEW MUNICIPAL TECHNICAL INSTITUTE, BELFAST.

THE formal opening of the new Municipal Technical Institute, Belfast, on October 30, by the Lord Lieutenant of Ireland (the Earl of Aberdeen), may be said to close the first epoch in the history of technical education in that city, and, indeed, in the whole of Ireland. When it is remembered that the Agriculture and Technical Instruction (Ireland) Act became law so recently as 1899, the progress already made is most noteworthy. Within that brief period the annual enrolment of students has risen to 5000, and these are now housed in a building which in beauty of architecture and excellence of equipment may challenge comparison with anything of a similar nature in the United Kingdom.

In the year 1900 the Corporation of Belfast decided to put the Act in force, and appointed a strong committee to carry on the work. The committee chose as its chairman Alderman Sir James Henderson. A happier selection or one more fruitful of good results it is difficult to imagine. A former Dublin University man, a member of the Irish bar, a past Lord Mayor of the City, and the managing director of an old and influential newspaper (the *Belfast News-Letter*), Sir James was admirably fitted to take up the duties of pioneer of technical education in his native city and province. Operations on the site were commenced in February, 1902, but, owing to the peculiar nature of the subsoil, great care was requisite in the formation of a suitable foundation. The site itself is 240 feet by 205 feet in size, and into this area were driven 2756 piles, each 40 feet in length. The heads of these piles were connected to longitudinal timbers, and the whole bonded together in concrete. The formal laying of the foundation-stone was performed on November 24, 1902, by the Earl of Dudley, at that time Lord Lieutenant of Ireland.

A general idea of the external architectural design of the building will be readily grasped from the accompanying reproduction from a photograph; and it will be sufficient to state here that the height of the top of the surmounting balustrade above the pavement is 85 feet; to the top of the domed towers the height is 135 feet. Internally, the building surrounds two courtyards, these courtyards being lined with white glazed bricks and roofed in with glass over the ground floor. The corridors are carried round these areas, and are spacious and well lighted. The floors throughout are of steel and concrete, finished in the laboratories and class-rooms with solid wood blocks, and in the corridors and lavatories with marble terrazzo. Ample gas and water supplies are laid on everywhere, and the building is lighted throughout by electricity. Heating and ventilation are provided by the "Plenum" system. The air, after being washed and screened, enters the heating chamber, where it is passed over tempering coils, and is finally driven throughout the building by a large pair of "Ulster" centrifugal fans. The capacity of these fans is 140,000 cubic feet of air per minute. Arrangements are also made for driving these fans by electricity when heat is not required.

Coming to the question of departmental arrangement, the general idea has been to group together the work of each department in one suite of rooms. The subjects taught are grouped into departments as follows:—mathematics, mechanical engineering, naval architecture, physics and electrical engineering, building trades, textiles, pure and applied chemistry, miscellaneous industries, natural science, commerce, domestic economy, and art.

The department of mechanical engineering includes a total area of 13,000 square feet. On one floor are the lecture rooms, drawing rooms, a photo-printing room, and a mechanical laboratory in which fifty students can work at the same time. The engineering laboratory, workshops, and boiler house are on another floor. The mechanical laboratory is fitted with a large range of appliances of small type all of the newest description. The central idea in providing the equipment has been to keep the application of mechanics to engineering well to the front. A small hydraulics section is attached to this laboratory. The floor of the engineering laboratory is double, and in the intervening space are stored all shafts,

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